bp

per our conversation

BP America Inc.
BP Legal
200 East Randolph Drive
MC 2207A
Chicago, Illinois 60601
Tel No.: 312-856-7168
Fax No.: 312-856-5867
E-mail: nethc@bp.com

September 6, 2002

VIA FAX 703-305-3230

TO: Mr. Jeryl McDowell
U.S. Patent Office

FROM: Ms. Carol M. Neth
Paralegal, IP Group

RE: BP CORPORATION NORTH AMERICA INC.
International Application No. PCT/US02/01456
International Filing Date: January 17, 2002
Based on Priority: USSN 09/779,284 filed February 8, 2001
HYDROTREATING OF COMPONENTS FOR REFINERY BLENDING OF TRANSPORTATION FUELS
Our Case No. 37248-02

Dear Mr. McDowell:

Following up on our telephone conversation of Friday, August 30, attached is a copy of the PCT application that includes a completed Request form, a Fee Calculation Sheet, a copy of the general power of attorney, the specification, one sheet of drawing and a stamped and dated return postcard with the international serial number and filing date stamped on it. I am also enclosing the transmittal letter, a copy of the Express Mail receipt and a copy of the check sent to the PCT Receiving Office on January 16, 2002.

As you requested, attached is the PCT Demand that was sent today and is due September 8, 2002.

Please let me know if you need any other information or documents as soon as possible.

Thank you for your help in this matter.

C. M. Neth

Carol M. Neth
Paralegal, IP Group

That which is claimed is:

1. A process for the production of fuel or blending component of fuels which are liquid at ambient conditions, which process comprises:

providing a high-boiling hydrogenation feedstock comprising a mixture of hydrocarbons and sulfur-containing organic compounds, the feedstock consisting essentially of material boiling between about 200° C. and about 425° C. and having a sulfur content up to about 2,500 ppm;

contacting the high-boiling feedstock with a gaseous source of dihydrogen at hydrogenation conditions in the presence of a hydrogenation catalyst which exhibits a capability to enhance the incorporation of hydrogen into one or more of the sulfur-containing and/or nitrogen-containing organic compounds and under conditions suitable for hydrogenation of one or more of the sulfur-containing organic compounds; and

recovering a product comprising a mixture of hydrocarbons and other organic compounds and having a sulfur content less than about 35 ppm of sulfur.

2. The process for the production of fuel or blending component of fuels according to claim 1 wherein the hydrogenation catalysts are the same or different and comprises at least one active metal, selected from the group consisting of the *d*-transition elements, each incorporated onto an inert support in an amount of from about 0.1 percent to about 20 percent by weight of the total catalyst.

3. The process for the production of fuel or blending component of fuels according to claim 1 wherein the hydrogenation catalyst comprises one or more metals selected from the group consisting of cobalt, nickel, molybdenum and tungsten.

4. The process for the production of fuel or blending component of fuels according to claim 1 wherein the recovered product contains less than about 15 ppm of sulfur.

contacting the high-boiling feedstock with a gaseous source of dihydrogen at hydrogenation conditions in the presence of a hydrogenation catalyst which exhibits a capability to enhance the incorporation of hydrogen into one or more of the sulfur-containing organic compounds and under conditions suitable for hydrogenation of one or more of the sulfur-containing organic compounds; and

recovering a high-boiling liquid having a sulfur content less than about 15 ppm.

10. The process for the production of fuel or blending component of fuels according to claim 9 wherein the hydrotreating of the refinery distillate employs at least one bed of hydrogenation catalyst comprising cobalt and one or more metals selected from the group consisting of nickel, molybdenum and tungsten, each incorporated onto an inert support in an amount of from about 0.1 percent to about 20 percent by weight of the total catalyst.

11. The process for the production of fuel or blending component of fuels according to claim 9 wherein the contacting the high-boiling feedstock with a gaseous source of dihydrogen employs at least one bed of hydrogenation catalyst comprising nickel and one or more metals selected from the group consisting of, molybdenum and tungsten, each incorporated onto an inert support in an amount of from about 0.1 percent to about 20 percent by weight of the total catalyst.

12. The process for the production of fuel or blending component of fuels according to claim 9 wherein the treating of recovered liquid employs at least one bed of solid sorbent comprising alumina.

13. The process according to claim 9 which further comprises treating at least a portion of the high-boiling liquid with a solid sorbent, an ion exchange resin, and/or a suitable immiscible liquid containing a solvent or a soluble basic chemical compound, to obtain a high-boiling product having a sulfur content less than about 10 ppm.

14. The process according to claim 13 which further comprises blending at least portions of the low-boiling blending

component and the high-boiling product to form fuel for use in compression ignition internal combustion engines, and wherein the fuel exhibits a suitable flash point of at least 38° C. as measure by ASTM D93, and contains less than 15 ppm sulfur.

15. The composition according to claim 14 wherein the fuel exhibits a suitable flash point of at least 49° C.

16. The process according to claim 9 which further comprises blending at least portions of the low-boiling blending component and the high-boiling liquid to form fuel for use in compression ignition internal combustion engines, and wherein the fuel exhibits a suitable flash point of at least 38° C. as measure by ASTM D93, and contains less than 15 ppm sulfur.

17. The composition according to claim 9 wherein the fuel exhibits a suitable flash point of at least 49° C.

HYDROTREATING OF COMPONENTS FOR REFINERY BLENDING OF TRANSPORTATION FUELS

ABSTRACT OF THE INVENTION

Economical processes are disclosed for the production of components for refinery blending of transportation fuels by selective hydrogenation of sulfur-containing and/or nitrogen-containing organic compounds contained in mixtures of hydrocarbons which are liquid at ambient conditions. Integrated hydrotreating processes of this invention advantageously provide their own source of high-boiling hydrogenation feedstock derived, for example, by fractionation of hydrotreated petroleum distillates. The high-boiling hydrogenation feedstock consisting essentially of material boiling between about 200° C. and about 425° C. and having a sulfur content up to about 2,500 ppm, is contacted with a gaseous source of dihydrogen at hydrogenation conditions in the presence of a hydrogenation catalyst which exhibits a capability to enhance the incorporation of hydrogen into one or more of the sulfur-containing and/or nitrogen-containing organic compounds and under conditions suitable for hydrogenation of one or more of the sulfur-containing organic compounds, thereby producing a product comprising a mixture of hydrocarbons and other organic compounds and having a sulfur content less than about 35 ppm of sulfur. Advantageously, all or a portion of the product is blended with a low-boiling fraction of a hydrotreated distillate to produce a distillate fuel having a sulfur content of less than 15 ppm.